

*ADIANTUM PEDATUM* SSP. *CALDERI*, A NEW  
SUBSPECIES IN NORTHEASTERN NORTH AMERICA

WILLIAM J. CODY

The presence, in the Shickshock Mountains of the Gaspé Peninsula, Quebec, of an *Adiantum* which differed substantially from *Adiantum pedatum* L. of rich deciduous woods in northeastern North America was pointed out by Fernald (1905). This plant he concluded was var. *aleuticum* Rupr., which is known from California to Alaska and eastern Asia. Rugg (1922) later reported it from Belvidere Mountain in northwestern Vermont, and Mousley (1923) reported it from Stanstead County, Quebec, and western Newfoundland.

An examination of some 300 sheets of *Adiantum pedatum* ssp. *pedatum* from eastern North America and over 100 sheets of *A. pedatum* ssp. *aleuticum* (Rupr.) Calder & Taylor from western North America has shown that the plants of the Shickshock Mountains and parts of southeastern Quebec and adjacent Vermont and western Newfoundland are even more distinct than ssp. *aleuticum* is from ssp. *pedatum*. They may be distinguished from ssp. *aleuticum* and ssp. *pedatum* by their generally shorter stature, stiffly crowded stipes, glaucous fronds, smaller pinnules and conspicuous indusia. The plants are found on serpentine and dolomite talus slopes and tablelands.

Of particular phytogeographic significance is the presence of similar plants on serpentine rocks in Washington and northern California. This distribution pattern is shared with another fern, *Polystichum scopulinum* (D. C. Eaton) Maxon.

The only specimen of *Adiantum pedatum* in the Linnaean Herbarium at London (1252.2) was collected by Kalm in Virginia. It is the typical plant of our northeastern North American woodlands, in which the fronds have arched and strongly recurved branches. The type material of ssp. *aleuticum* came from Unalashka and Kodjak. A fragment of the Chamisso collection from Unalashka has been seen (NY). It is the characteristic plant found from Alaska to California.

The following name is proposed for the plant of serpentine and dolmitic rocks:

***Adiantum pedatum* L. ssp. *calderi* ssp. nov.**



A *ssp. pedato* et *ssp. aleutico* statura plerumque minore, stipitibus rigide aggregatis, frondibus glaucis, pinnulis semper parvioribus et indusiis conspicuis distinguendum. HOLOTYPE: cold sheltered ravines, Mt. Albert, Gaspé County, Quebec, *J. F. Collins & M. L. Fernald, s.n.* 14 August 1905 (DAO); ISOTYPE (GH) (Figure 1).

A chromosome number of  $n = 29$  (det. G. A. Mulligan) has been obtained from a collection from Mount Albert (*C. Rousseau s.n.*, 5 Sept. 1965 (DAO)). This is the same as for both *ssp. pedatum* and *ssp. aleuticum*.

Many collections of this subspecies have been made by later collectors from the type locality, e.g. *Fernald & Collins 270* (GH, DAO), *Marie-Victorin 17000* (DAO), *Cody et al. 718* (DAO).

The following are additional localities. CANADA. **Quebec:** Megantic Co., Black Lake, en grosses touffes le long des ruisselets sur les terrains magnésiens découverts, *Marie-Victorin et al. 46, 653* (DAO) plus several other collections; Caribou Lake east of Black Lake, shaded serpentine, *Fernald & Jackson 11959* (CAN, GH); Caribou Hill, Black Lake, dry serpentine slopes and crests, *Fernald & Jackson 11957* (CAN, GH); Coleraine, sur les collines de serpentine depuis longtemps dénudées, *Marie-Victorin et al. 45, 434* (CAN); Thedford Mines, sur les serpentines près des mines, *Marie-Victorin et al. 4125* (CAN); Sherbrooke Co., Sawdust Lake, Chain Ponds, on rock ledges firmly rooted in narrow crevices, rocky bluff overlooking lake beneath young red pines (partly shaded), *Terrill 7970* (DAO); Wolfe Co., Lac Sunday, talus de'éboullis de serpentine, *Blais et al. 11,428* (DAO). **Newfoundland:** Humber District: Goose Arm, Parson's Cover, on dry limestone talus, *Rouleau 1751* (DAO); Serpentine (Coal) River, Red Barren Brook, dry serpentine shores, *Rouleau 1893* (DAO, CAN); North Arm, woods on southerly slopes of dry serpentine ridge, *Rouleau 872* (DAO); North Arm, Flagstaff Point, southerly slopes of dry serpentine ridge, *Rouleau 842* (DAO); Cloudy Pond Mountain, on the dry limestone talus, *Rouleau 200* (DAO, CAN); Bear Lake, limestone talus-slopes, *Rouleau 4584* (DAO, CAN); Rileys Brook, barren serpentine top of hill, *Rouleau 4423*; Blomidon Mountains, serpentine and magnesian limestone barrens, *Fernald & Wiegand 2308* (CAN); Benoit's River, Humber Arm, 48°58'N, 58°16'W, *Tuomikoski 426* (CAN); St. Barbe District: Bonne Bay, Stanleyville, on dry limestone talus, *Rouleau 443* (DAO, CAN); Trout River Big Pond, Rocky Brook, dry serpentine slopes, *Rouleau 3278* (DAO); Bonne Bay, the Tableland, dry serpentine barren slopes and tableland, *Rouleau 3773* (DAO, CAN); Gros Morne National Park, Trout River Pond, 49°17'N, 58°03'W, *Larix laricina* scrub with *Betula papyrifera* on serpentine talus slope, *Bouchard & Hay 73-5* (CAN); Gros Morne National Park, Winter House Brook, 49°28'N, 57°57'W, serpentine tableland, *Bouchard & Hay 73-4* (DAO); Bonne Bay, serpentine tablelands, *Fernald & Wiegand 2309* (CAN); St. Georges District: Bond Asbestos Mine, serpentine outcrop, *Rouleau 4436* (DAO, CAN); White Bay District: St. Anthony, east slope of Eastern White Hills, moist hillside, *Savile & Vaillancourt 2776* (DAO); Flatwater Pond, 49°48'N, 56°19'W, on rocky lake shore, *Shchepanek & White 2812* (CAN).

U.S.A. **Vermont:** Belvidere Mt., Eden, *Mrs. Jolley, s.n.* July 1922 (GH); Montgomery, *Mrs. Jolley, s.n.* in 1924 (GH). **California:** Gasquet, Del Norte Co., moist





Figure 1. Photograph of type specimen of *Adiantum pedatum* ssp. *calderi* (Collins & Fernald, Mount Albert, Quebec, 14 Aug. 1905 (DAO)).



spots in serpentine formation, *Tracy 9520* (DAO). **Washington:** Wenatchee National Forest, Mount Stewart, in crevice in moist draw on steep slope at foot of Esmerelda Peak, greenstone, *Cody 18454* (DAO).

The subspecies is named for James A. Calder, a former colleague and co-author of *Flora of the Queen Charlotte Islands* (Calder & Taylor, 1968), who pointed out the distinctiveness of this fern.

The following key may be used to separate the three subspecies of *Adiantum pedatum*:

- A. Branches of fronds widely divergent, with the lowermost arched and strongly recurved (rich deciduous woods, north-eastern North America) . . . . . *ssp. pedatum*
- A. Branches usually strongly ascending
  - B. Fronds tightly clumped; pinnules glaucous, small, the middle 7–12 (17) mm long, but little incised; indusia conspicuous (serpentine and dolomites, western Newfoundland, Gaspé, Megantic and Sherbrooke counties Quebec, northern Vermont, California and Washington) . . . . .  
 . . . . . *ssp. calderi* Cody
  - B. Fronds not tightly clumped; pinnules green, the middle larger (10) 12–20 (23) mm long, frequently deeply incised; indusia not conspicuous (rocky woods, Alaska to California) . . . . . *ssp. aleuticum* (Rupr.) Calder & Taylor

The loan of specimens from National Museum of Natural Sciences, Ottawa (CAN), Gray Herbarium of Harvard University (GH), and New York Botanical Garden (NY), is much appreciated.

#### LITERATURE CITED

- CALDER, J. A. & R. L. TAYLOR. 1968. *Flora of the Queen Charlotte Islands, Part I. Systematics of the Vascular Plants*. Canada Dept. Agriculture, Research Br. Monograph 4 Part 1. 659 pp.
- FERNALD, M. L. 1905. An alpine *Adiantum*. *Rhodora* 7: 190–192.
- MOUSLEY, H. 1923. The alpine maidenhair fern (*Adiantum pedatum* L. var. *aleuticum* Rupr.) at Hatley, Stanstead County, Quebec. *Can. Field-Nat.* 27: 84–85.
- RUGG, H. G. 1922. *Adiantum pedatum* var. *aleuticum* in New England. *Amer. Fern Jour.* 12: 128–129.

BIOSYSTEMATICS RESEARCH INSTITUTE  
 AGRICULTURE CANADA  
 OTTAWA, ONT., CANADA K1A 0C6